DATA EVALUATION RECORD

S-METHOPRENE
(Z112-010)

STUDY TYPE: Product Performance (OPPTS 810.3400)

MRID 46876404

Prepared for
Biopesticides and Pollution Prevention Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
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Prepared by
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Task Order No. 06-087

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DATA EVALUATION RECORD

EPA Secondary Reviewer:	ANGELA GONZALES 10/24/06
STUDY TYPE:	Product Performance (810.3400)
MRID NO:	46876404
DP BARCODE:	DP331212
DECISION NO:	368777
SUBMISSION NO:	Not provided
TEST MATERIAL:	Z112-010 (a.i., 4.25% w/w S-methoprene)
STUDY NO:	BA-015
SPONSOR:	Management Contract Services, Inc., Valdosta, GA
TESTING FACILITY:	EcoSafe Natural Products, Inc., 7-6782 Veyaness Road, Saanichton BC V8M 2C2, Canada
TITLE OF REPORT:	Laboratory Efficacy Evaluation of Z112-010 Formulation
AUTHOR:	Bradbury, R.
STUDY COMPLETED:	March 30, 2006
CONFIDENTIALITY CLAIMS:	None
GOOD LABORATORY PRACTICE:	A signed GLP statement was provided. The study was GLP compliant with the following exceptions: the quality assurance unit does not meet the requirements of 40 CFR Part 160.35; written SOPs have not been formally set forth by management; and a signed quality assurance statement is not included in the report.
STUDY SUMMARY:	In a laboratory study, efficacy of Z112-010 (a.i., 4.25% S-methoprene) against *Aedes aegypti* mosquitoes was tested over 45 days. Water-filled drums were treated once with Z112-010 at a rate equivalent to 2.5 lb of product/acre (0.106 lbs active ingredient/acre) with a water depth of two feet. Cohorts of late third or early fourth instar *A. aegypti* larvae were periodically added to the drums and monitored for adult mosquito emergence from pupae. In Z112-010 treated drums, emergence of adult mosquitoes was 0% during the entire test. Emergence in untreated control drums was 69-96%.
CLASSIFICATION:	**Acceptable**

Test Material
Z112-010 (a.i., 4.25% w/w S-methoprene), pellet formulation, Lot No. NB107-14-11B

Test Methods
The objective of the test was to determine the efficacy of Z112-010 against *Aedes aegypti* under laboratory conditions. *A. aegypti* eggs (Benzon Research, Carlisle, PA) were hatched and reared in the laboratory at ambient temperature. The larvae were fed a mixture of dried defatted bovine liver and torula yeast (3:1) as needed. The larval diet was prepared by adding 5 g of the mixed powder to 400 mL of bottled spring water. Fresh diet was prepared weekly and refrigerated until used.

The test was conducted in 55-gal steel drums lined with polyethylene drum liners and filled with 50 gal of charcoal-filtered tap water at least two days before larvae were added. The larvae (third or early fourth instars) were transferred to the drums in plastic cups containing bottled spring water, and approximately 20 larvae were placed in each drum using plastic pipettes. Ten mL of larval diet was added to each drum each time larvae were added. The water temperature in drums was maintained at 69 to 75°F during the study.

The test material was added to the drums at an application rate (0.087 g/drum) equivalent to 2.5 lb of Z112-010/A (0.106 lbs a.i./A) with a water depth of two feet. Untreated drums served as the control. A commercial product (Altosid Pellets) was also included in the test at the same application rate for comparison. Each treatment was replicated three times in a completely randomized design. As pupae developed, they were removed to 8-oz plastic cups containing 6 oz of their respective treatment water. The cups were covered with screened lids to prevent escape of any emerged adults. When all the larvae had pupated, a new set of larvae was added to the drums. During the test, four separate sets of larvae were added to the drums (Table 1). The water in the drums was not changed during the test.

TABLE 1. Treatment dates for test of Z112-010

Date of larval introduction	Completion date	Days after treatment
2/5/2006	2/20/2006	15
2/17/2006	3/7/2006	30
2/25/2006	3/13/2006	36
3/15/2006	3/23/2006	45

Data from p. 8, MRID 46876404

Results were reported as corrected adjusted percent inhibition of emergence (IE) for each cohort, calculated using Abbott's formula: $\frac{(\%\ \text{control emerged} - \%\ \text{treated emerged})}{\%\ \text{control emerged}} \times 100$.

Results Summary
The results are summarized in Table 2. Z112-010 provided 100% inhibition of emergence throughout the test.

TABLE 2. Efficacy of Z112-010 against *Aedes aegypti* larvae in laboratory tests									
		15 DAT[a]		30 DAT		36 DAT		45 DAT	
Treatment	**Replicate**	**Total larvae/ drum**	**No. of emerged adults**	**Total larvae/ drum**	**No. of emerged adults**	**Total larvae/ drum**	**No. of emerged adults**	**Total larvae/ drum**	**No. of emerged adults**
Untreated control	1	20	10	20	19	22	20	20	19
	2	17	14	20	20	20	18	19	18
	3	21	16	17	16	21	19	22	19
	Total	58	40	57	55	63	57	61	56
	% emerged	--	69	--	96	--	90	--	92
	% IE[b]	--	--	--	--	--	--	--	--
Z112-010	1	15	0	17	0	21	0	20	0
	2	15	0	21	0	20	0	20	0
	3	19	0	20	0	20	0	19	0
	Total	49	0	58	0	61	0	59	0
	% emerged	--	0	--	0	--	0	--	0
	% IE	--	100	--	100	--	100	--	100
Altosid Pellets	1	17	0	20	0	20	0	19	0
	2	17	0	19	0	22	1	20	1
	3	14	0	18	0	23	0	20	0
	Total	48	0	57	0	65	1	59	1
	% emerged	--	0	--	0	--	1	---	1
	% IE	--	100	--	100	--	99	--	98

Data from pp. 8-9, MRID 46876404

[a]Days after treatment

[b]IE= Inhibition of emergence, calculated using Abbott's formula.

Study Author's Conclusions

The study author concluded that Z112-010 provided control up to 45 days after application, and was equal to or better than the commercial Altosid Pellets.

Reviewer's Conclusion

The reviewer agrees with the study author's conclusion. The application rate used in this test (2.5 lbs/A) is the lowest rate recommended for floodwater and permanent water sites on the product label. The test material inhibited adult emergence by 100% for 45 days. The label claims that the test material provides up to 30 days of control.